REMARKS

In the Office Action, claims 1, 3-11 and 14-15 were rejected under 35 U.S.C. §103(a) as being unpatentable over International Application Publication No. WO 00/343369 (Nishihata '369).

By this Amendment, claims 1 and 8-11 have been amended, and claims 3 and 7 have been canceled. Applicants believe that no new matter is introduced by any of the amendments, and support for the amendments may be found in the claims and specification as originally filed. Upon entry of this Amendment, claims 1, 8-11, 14-15 and 19-20 are pending, of which claims 19-20 are withdrawn. For the reasons set forth hereinbelow, Applicants traverse the rejections and respectfully request that the §103 rejections of the pending claims be withdrawn.

§103 Rejections

Claims 1, 8-11 and 14-15

Applicants have herein amended independent claim 1 and respectfully submit that claim 1, as amended, is nonobvious in view of Nishihata '369. Support for the amendments to claim 1 may be found, for example, in original claim 7 and the following passages of the instant application:

> The present invention relates to a stock shape for machining, which is composed of an extruded product of a thermoplastic resin material and used in secondarily forming into a formed product of a desired shape by machining such as cutting, drilling and/or shearing." (*See* page 1, lines 6-10); and
>
> Cutting, drilling, shearing and combinations thereof are representative of the machining. (*See* page 31, lines 8-9).

In accordance with the analysis stated in *Graham v. John Deere Co.*, a determination of obviousness under § 103 requires (1) determining the scope and content of the prior art; (2)

ascertaining the differences between the claimed invention and the prior art; and (3) resolving the level of ordinary skill in the pertinent art. The question of obviousness must be resolved on the basis of these factual inquiries and any secondary considerations. *See* MPEP § 2141.

Applicants submit that Nishihata '369 fails to disclose, teach or suggest each and every limitation of the invention recited in claim 1, that the differences between the Nishihata '369 and the claimed invention are **substantial**, and that when the invention recited in claim 1 is considered as a whole, the invention recited in claim 1 is nonobvious in view of Nishihata '369. *See* MPEP § 2141.02 (stating that in determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious).

More specifically, Applicants submit that Nishihata '369 differs from the invention recited in claim 1 with respect to at least the following limitations:

- composition of the thermoplastic resin (A)
- burr resulting from the machining;
- machining such as cutting, drilling, shearing and combinations thereof;
- the plate or round bar; and
- the process utilized to produce the stock shape.

Regarding the composition of the thermoplastic resin (A) and the burr resulting from the machining, the specification of the instant application describes the mixture of the thermoplastic resin as follows:

> At least two of these thermoplastic resins are preferably used in combination from the viewpoint of inhibiting the production of burr upon drilling. The single use of a resin having high toughness tends to produce burr upon drilling. However, the combined use of two or more thermoplastic resins can markedly inhibit the production of burr. In particular, a resin having high toughness and a resin having relatively low toughness are used in combination, whereby the production of burr can be prevented while retaining high toughness. (*See* page 15, lines 13-22); and

> As preferable combination of two or more thermoplastic resin, may be mentioned combinations of poly(ether ether ketone) (PEEK)/poly(ether imide) (PEI), poly(ether imide) (PEI)/poly(phenylene sulfide) (PPS), poly(ether ether ketone) (PEEK)/poly(phenylene sulfide) (PPS) and poly(ether ether ketone) (PEEK)/poly(ether imide) (PEI)/poly(phenylene sulfide) (PPS). (*See* page 16, lines 4-10).

In other words, the limitation "the thermoplastic resin (A) is a mixture composed of a combination of poly(ether ether ketone)/poly(ether imide), poly(ether imide)/poly(phenylene sulfide), poly(ether ether ketone)/poly(phenylene sulfide) or poly(ether ether ketone)/poly(ether imide)/ poly(phenylene sulfide)" recited in claim 1 is important for inhibiting the production of burr upon drilling.

Furthermore, the following Examples are described in the specification of the instant application at page 43, line 19 to page 46, line 14 thereof:

> Example 1 (Products having a surface resistivity of the 11^{th} power);
>
> Example 2 (Products having a surface resistivity of the 11^{th} power with the carbon fiber changed to MLD CF);
>
> Example 3 (Products having a surface resistivity of the 9^{th} power);
>
> Examples 4 and 5 (Reduction of the amount of burr produced upon drilling);
>
> Example 6 (Products having a surface resistivity of the 10^{th} power);
>
> Example 7 (Products having a surface resistivity of the 6^{th} to 7^{th} power);
>
> Example 8 (Products having a surface resistivity of the 7^{th} to 8^{th} power);
>
> Example 9 (Reduction of the amount of burr produced upon drilling); and
>
> Example 10 (Reduction of the amount of burr produced upon drilling).

As apparent from these Examples, particularly from Examples 4-10 and even more particularly from Examples 4-5 and 9-10, the amount of burr produced by the machining of the stock shape can be markedly reduced.

With respect to the limitation incorporated from original claim 7, at page 4 of the Office Action, the Examiner has determined that the synthetic resins disclosed by Nishihata '369, such as poly(ether ether ketone) and poly(ether imide) can be combined (page 14, lines 13-17 and page 15, lines 13-14) which is interpreted as being combined in a ratio of 50:50.

Applicants respectfully disagree with this determination and note that although Nishihata '369 does describe "poly(phenylene sulfide), poly(ether ether ketone), polyether imide,..." (page 14, lines 13-17) and that "These synthetic resins may be used either singly or in any combination thereof." (page 15, lines 13-14), the poly(phenylene sulfide) and the like indicated are only described as an example of a large number of synthetic resins.

Additionally, Applicants further note that Nishihata '369 specifically uses only a single synthetic resin in the Examples and does not disclose any example of mixtures thereof. The Examples and Comparative Examples of Nishihata '369 only use poly(phenylene sulfide), polybutylene terephthalate, polyoxymethylene, polycarbonate, polypropylene, polyethylene, tetrafluoroethylene/perfluoroalkyl vinyl ether copolymer, and poly(ether ketone) singly.

Accordingly, Applicants submit that Nishihata '369 does not disclose the limitation "the thermoplastic resin (A) is a mixture composed of a combination of poly(ether ether ketone)/poly(ether imide), poly(ether imide)/poly(phenylene sulfide), poly(ether ether ketone)/poly(phenylene sulfide) or poly(ether ether ketone)/poly(ether imide)/poly(phenylene sulfide)" as recited in claim 1 for inhibiting the production of burr.

The presumed reason why the production of burr upon drilling is inhibited by using two or more thermoplastic resins in combination compared with the single use of a thermoplastic resin is set forth hereinbelow.

With respect to burr produced upon drilling in case of single use a thermoplastic resin having high toughness and strength, the resin is neither cut out of a wall surface around a bore

nor ground finely even when a drill is rotated because the resin has the above properties. In short, the most of the resin remains on the wall surface of the bore made by drilling, and so the length of burr also becomes long.

However, when resins are used in combination, the properties of the mixture, such as strength, elongation and modulus of elasticity vary according to factors such as dispersion of the resins by mixing, a state of an interface between the resins and the degree of kneading in addition to factors such as properties of the resins used and mixing proportions thereof.

Thus, the range of variation of properties can be controlled by a combination of specific thermoplastic resins. For example, when the strength is lowered by this control, burr produced around a bore upon drilling is rapidly cut out of the wall surface of the bore by the rotating force of the drill and further ground into fine pieces. The fine pieces are swept away from the stock shape for machining by the rotating force of the drill. As a result, it is presumed that burr observed is little, and the length of the burr becomes short.

As described above, the invention recited in claim 1 inhibits the production of burr by using the resins in combination, i.e., controlling the range of variation of properties caused by the combination.

Regarding the machining, at page 2 of the Office Action, the Examiner has determined that because Nishihata '369 discloses the following:

> the composition can be formed or molded into various shapes and can be applied to a wide variety of fields including the field of machining (page 29, lines 13-25 and page 31, lines 11-20),

it can be expected for the various shapes to include a stock shape for machining.

Applicants respectfully disagree with this determination and note that Nishihata '369 specifically discloses the following:

> The synthetic resin compositions (1) and (2) according to the present invention

> can be formed into formed or molded products of various shapes, for example, sheets, films, tubes, containers, etc. by conventional melt processing techniques such as injection molding and extrusion. The formed or molded products obtained by forming or molding the synthetic resin compositions according to the present invention can be suitably applied to a wide variety of fields of which control of static electricity, prevention of electrification, electromagnetic interference shielding, prevention of dust collection, etc. are required (*See* page 29, lines 13-25); and
>
> In a field of OA machines, may be mentioned charging members such as charging rolls, charging belts, static charge eliminating belts, transfer rolls, transfer belts and developing rolls in image forming apparatus such as electrophotographic copying machines and electrostatic recording apparatus; and transfer drums, bushings, paper and paper money carrying parts, paper feed rails, font cartridges, ink ribbon canisters, guide pins, trays, rollers, gears, sprockets, printer housings and connectors for recording apparatus (*See* page 31, lines 11-20).

Therefore, in view of the above, Applicants submit that Nishihata '369 does not disclose, teach or suggest anything about the machining such as cutting, drilling, shearing and combinations thereof as recited in claim 1.

Regarding the plate or round bar, the Examiner has determined that because Nishihata '369 discloses the following:

> the composition can be formed or molded into various shapes and can be applied to a wide variety of fields including the field of machining (page 29, lines 13-25 and page 31, lines 11-20),

it would have been obvious to one of ordinary skill in the art for the article (i.e. a plate or round bar) to be formed or molded into a shape having a thickness not smaller than 4 mm.

Applicants respectfully disagree with this determination and note that Nishihata '369 specifically discloses the following:

> The synthetic resin compositions (1) and (2) according to the present invention can be formed into formed or molded products of various shapes, for example, sheets, films, tubes, containers, etc. by conventional melt processing techniques such as injection molding and extrusion (*See* page 29, lines 14-19).

Applicants submit that this passage of Nishihata '369 indicates that the formed or molded products of various shapes are formed or molded by melt processing techniques such as injection

molding and extrusion. Thus, in contrast to the "stock shape for machining" recited in claim 1 (which is used in secondarily forming into a formed product of a desired shape by machining such as cutting, drilling, shearing and combinations thereof), the formed or molded products of Nishihata '369, which are obtained by melt processing techniques such as injection molding and extrusion, are final products.

Accordingly, Applicants submit that Nishihata '369 does not disclose, teach or suggest the "stock shape for machining, which is used in secondarily forming into a formed product of a desired shape by machining such as cutting, drilling, shearing and combinations thereof" as recited in claim 1.

Regarding the process utilized to produce the stock shape, Applicants note that claim 1 recites the following limitation:

> the solidified extruded product is produced by an extrusion and solidification method using an extrusion forming machine, to the tip of which an extrusion die and a forming die are coupled, and subjected to a heat treatment for at least 30 minutes at a temperature of from 150°C to a temperature capable of retaining the solidified state after the extrusion and solidification, thereby residual stress is removed

At page 3 of the Office Action, the Examiner indicates that "For purposes of examination, product-by-process claims are not limited to the manipulation of the recited steps, only the structure implied by the steps." However, Applicants note that the degree of residual stress is an important property for determining high dimensional accuracy of the secondarily formed product as described in the instant specification as follows:

> An extruded product too great in residual stress upon extrusion tends to deform upon or after machining, and so it is difficult to obtain a secondarily formed product having high dimensional accuracy. (*See* page 7, lines 9-12).

Applicants note that the recited limitation of "subjected to a heat treatment for at least 30 minutes at a temperature of from 150°C to a temperature capable of retaining the solidified state

after the extrusion and solidification" is a process for expressing the degree of residual stress. Thus, Applicants respectfully submit that the technical significance of this limitation should be strictly evaluated. Also, Applicants respectfully submit that Nishihata '369 does not disclose, teach or suggest anything about the residual stress.

Therefore, in view of the foregoing, Applicants submit that Nishihata '369 fails to disclose, teach or suggest each and every limitation of the invention recited in claim 1, that the differences between the Nishihata '369 and the claimed invention are **substantial**, and that when the invention recited in claim 1 is considered as a whole, the invention recited in claim 1 is nonobvious in view of Nishihata '369.

Applicants further submit that claims 8-11 and 14-15, which depend from claim 1, are also nonobvious in view of Nishihata '369. *See* MPEP §2143.03 (stating that if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious).

Accordingly, Applicants respectfully request that the §103 rejections associated with claims 1, 8-11 and 14-15 be withdrawn.

CONCLUSION

Applicants respectfully request a Notice of Allowance for the pending claims in this application. If the Examiner believes that personal communication will expedite the prosecution of this application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: April 12, 2011

/s/ Robert A. Muha
Robert A. Muha
Registration No. 44,249

Reed Smith LLP
P.O. Box 488
Pittsburgh, PA 15230
(412) 288-7222